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A self-controlled problem-solving approach to the facilitation of effective behavior is presented. This approach involves training in the use of a cognitive strategy for dealing with real life problematic situations. An individual will progress through five phases with respect to real or hypothetical problematic situations. The first phase, orientation, involves the formation of a set or attitude to recognize and accept problematic situations when they occur and to inhibit the tendency to either respond automatically or to avoid the problem by doing nothing. In the second phase, problem statement and definition, problematic situation categories are introduced for training, and statement of the problem encouraged. Aspects of the problematic situation to be changed, are defined. In the third phase, the production of alternatives, the client produces associative responses related to the particular problematic situation in question. The fourth phase, decision making, involves anticipation of possible consequences of each alternative, the value and likelihood of occurrences of these consequences, and selection of the most satisfactory alternative. The final phase, verification, involves the trying out of this decision. (PS)

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Cognitive Processes, Problem-Solving, and Effective Behavior [1,2]

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Last year we initiated a long-term research project at Stony Brook on the identification, assessment, and facilitation of effective behavior in college freshmen. Working within a neo-behavioristic framework, we have conceptualized effective behavior in terms of the responses of individuals to certain critical problematic situations in the academic and social environment, and the likely consequences of those responses. We are currently involved in the assessment phase of the project. In this presentation, however, we would like to discuss our proposal for a self-controlled, problem-solving approach to the facilitation of effective behavior. This approach involves training in the use of a cognitive strategy for dealing independently with "real-life" problematic situations.

Before turning to the strategy, it would be helpful to define "problematic situation" and "problem-solving behavior". According to Skinner (1953), "In the true 'problem situation' the organism has no behavior immediately available which will reduce the deprivation or provide escape from aversive stimulation" (p.246). The problem is soluble for an individual if at least one effective response exists in strength in his repertoire, which cannot be emitted under present circumstances due to the absence of necessary cues. "Problem-solving" is defined by Skinner as "behavior which, through the manipulation of variables, makes the appearance of a solution more probable" (p.247). Problem-solving behavior, then, refers to the process of finding a solution. The solution, on the other hand, may be viewed as the resulting response or pattern of responses which effectively alters the situation so as to eliminate or reduce its problematic nature.

As we consider problem-solving behavior more specifically, we see that

Skinner's orientation emphasizes overt behavior and the manipulation of external variables. In contrast, we would like to employ a broader definition of "behavior" and focus our attention on certain cognitive operations, or covert behavioral interactions if you will, which might be involved in effective "real-life" problem-solving but which may not necessarily be representative of any immediate overt behavior

A Strategy for Problem-Solving Training

Our conception of a strategy is similar to that of Breger & McGaugh (1965) who describe it as a central program or plan that mediates overt responses. According to our view, a strategy is basically an internal or mediational process involving both a particular orientation and a specific set of cognitive operations. The specific strategy which we will discuss here may be viewed as a conceptualization of "real-life" social and personal problem-solving, which mediates effective behavior, or as a set of procedures for training in problem-solving within a clinical or counseling context.

As a first step, any attempt to facilitate problem-solving must take into consideration all aspects of an individual's personality and environment which may be related to his problem-solving performance. To the extent that personality, emotional, or environmental factors exist which may seriously interfere with the learning process involved, other treatment procedures may first be necessary to prepare the individual for problem-solving training. Once it has been established that the individual is prepared to respond to problem-solving training, he will then progress through the following five training phases with respect to either real or hypothetical problematic situations: (1) orientation, (2) problem statement and definition, (3) production of alternatives, (4) decision-making, and (5) verification. The specific procedures involved in each of these phases are based on information from a variety of sources, including the research and theoretical literature

on the process of problem-solving and decision-making (Kleinmuntz, 1966), research on training in productive thinking and creativity (Osborn, 1963; Parnes, 1967), discussions of economic and administrative behavior (Gore & Dyson, 1964; Simon, 1957, 1964); and, last but not least, learning theory and research.

Orientation

Becoming properly oriented to deal with problematic life situations is a matter of developing a set or attitude to (a) recognize and accept problematic situations when they occur, and (b) inhibit the tendency to either respond automatically according to the first "impulse" (and perhaps inappropriately or even disastrously), or passively avoid the problem by "doing nothing." Instructions and discussion are the major procedures to be employed here.

To develop this set, the general nature of such situations is described and discussed, as well as the nature and objectives of the training strategy. The fact is stressed that life is made up of an endless series of problematic situations, that this is the "normal" rather than "abnormal" state of affairs, and that one should anticipate more than the usual number of problematic situations when entering a new environment or social role. The client is instructed that when difficulties or uncertainties occur, he should immediately "stop and think" and try to identify the external situation or situations that are producing these difficulties, rather than acting automatically or dwelling upon his own personal reactions or emotions. Before terminating this phase, the client must understand and accept the fact that he has the potential to deal effectively with almost any problematic situation even though a solution may not immediately be apparent to him.

In addition to the use of the initial instructions and discussion to establish this orientation, the entire strategy, if adequately practiced during training and reinforced by coping effectively with problematic situations, should strengthen the proper set and further weaken the tendency to respond automatically

or not at all in such situations.

Problem Statement and Definition

To begin the second phase, namely, problem statement and definition, problematic situation categories are introduced for training (e.g., studying, dating, etc.). These may be prepared on the basis of the individual client's current life experiences, or a sample of common categories for particular types of environments (e.g., college life and work) might be prepared in advance for training purposes. These are placed in an hierarchical order based on their apparent difficulty level for the client (i.e., frequency and complexity of problematic situations). Training should begin with the least difficult and progress toward the more difficult categories.

Beginning with the first category, the client, with the help of the therapist or consultant, constructs a specific hypothetical or actual problematic situation. He is guided toward a statement and definition of the problem in clear, specific terms. This is a very crucial step which is likely to have a highly significant effect upon the outcome of the entire strategy for that particular problem. It has been reported that John Dewey once said: "A problem well-stated is half solved" (Osborn, 1963). By surveying the problematic situation very carefully, considering all the relevant facts, and then stating the facts in the clearest, most concrete terms, the client greatly increases the chances of an effective solution. He not only forces himself to make relevant what may have appeared at first glance to be irrelevant (Parnes, 1967), but he also increases his ability to appropriately label or classify the situation, which in turn enables him to relate the problem to past situations in the same category and bring his past learning to bear upon it (Mowrer, 1960). At the same time, he reduces the likelihood of inappropriate generalizations from past experience due to vague or ambiguous labeling (Dollard &

Miller, 1950).

The final step for the client in the problem statement and definition phase is to specify the "target objectives" for problem-solving, which refers to a clear statement as to what aspects of the problematic situation are to be changed and the exact nature of these changes. This step ensures the appropriate direction and setting of limits for the next phase of the strategy, namely, the production of alternatives.

Production of Alternatives

The search for alternatives is a creative, imaginative process as well as a process of remembering and recall. In many new problematic situations where old response patterns may be inappropriate, the client must generate new solutions. That is, the client must often think of ways of combining parts of different habitual responses into new actions (Osborn, 1963).

The major technique that we propose for facilitating the production of alternatives is based primarily on the procedures advocated by Osborn (1963) and Parnes (1967) for training in creative problem-solving. Essentially, the client is instructed to produce associative responses with respect to the particular problematic situation in question, in a way which helps to avoid "blocks" that may inhibit the associative process. The client is told that he is not to engage in"free association," but association with respect to the question: "What can a person possibly do in this particular situation?" Thus, the form and direction of the associations are governed by the way in which the problem is stated and defined and by the set to generate possible actions in the situation.

One way to facilitate associative responses and avoid "blocks" is through the "deferment-of-judgment" principle. According to this principle, the client tries to think of one alternative after another without concerning himself with the question as to their value, acceptability, or appropriateness. By avoid-

ing thinking in terms of response consequences at this point, insofar as it is possible to do so, the client learns to avoid the following two pitfalls: premature termination of the search with one of the first "good" alternatives to come to mind, and discouragement and premature termination of the search due to an early series of "poor" ideas.

A second procedure for facilitating associative responses is based on the principle that "quantity breeds quality". According to this principle, the more alternatives generated by the client, the more likely he is to arrive at the potentially best leads for a solution. Hence, the client is instructed to continue generating possible alternatives until he is unable to come up with any more ideas. When this point is reached, the phase of decision-making is initiated.

Decision-Making

Decision-making involves the selection of the "best" alternative for action and is probably the most difficult phase in the strategy. This selection is based on the client's expectations as to the possible consequences of the various alternatives. The client is instructed to (a) anticipate the possible consequences of each alternative, (b) consider the value and likelihood of occurrence of these consequences and (c) select the alternative which appears to have the greatest chance of solving the problem satisfactorily while maximizing other positive consequences and minimizing negative ones.

Just as any one client would not be expected to think of all possible alternatives, he will also be unable to anticipate all possible consequences. There is no way that he can know all of the consequences of an action in advance, especially when considering a novel response or solution. However, based upon his knowledge of general empirical relationships from his own past experience, his knowledge of the experiences of others, and information about the existing problematic situation from a careful statement and definition of the problem, he is asked

to form expectations as to possible consequences (Simon, 1957). Thus, the client is told to ask himself the question: "If I were to carry out this particular solution, what are the various things that could possibly happen as a result?" As an aid in this procedure, the client is instructed to consider consequences in four different categories: personal, social, short-term, and long-term.

In the personal category, the client attempts to evaluate each alternative in terms of the personal needs it might satisfy, the personal goals it might attain--with particular reference to the "target objectives" in the problematic situation--and the effects it might have on his personal feelings and emotions. The social consequences refer to the effects that the alternative action might have on various "significant others" in the client's life and the reactions of others to him. The short-term consequences refer to the immediate personal and social effects in the problematic situation. In anticipating long-term consequences, the client considers the possible personal and social consequences that might occur in the future as a result of the various short-term effects of each alternative, including the possibility of preventing similar problematic situations and the effects on long-range goals, plans, and personal-social functioning.

When the client has carefully examined the alternatives for their possible consequences in the four categories, he is then asked to consider the value of these consequences--according to his own personal standards--and their likelihood of occurrence. In assigning a value to each consequence, the strategy, at the present time, requires that the client consider only three values: positive, negative, and neutral; or satisfactory, unsatisfactory, and neutral. Similarly, in estimating the likelihood of occurrence of consequences, clients are simply asked to consider a consequence as likely to occur, unlikely to occur, or as having about a 50-50 chance of occurring. The client is then instructed to roughly weigh the various alternatives, one against the other, considering the various conse-

quences of each with their values and likelihood of occurrence. Finally, he is asked to select the alternative which in his judgement seems to have the best chance of solving the problem satisfactorily (i.e., achieving the "target objectives") while maximizing the likelihood of other positive consequences and minimizing the likelihood of negative ones. This selection leads to the final phase of the strategy, namely, verification.

Verification

In order to carry out this phase, the client must first perform the selected behavior, either in "real-life" or in a role-playing situation. Action in "real-life" problematic situations, following decision-making, is certainly not guaranteed. Some clients may fail to carry out or maintain the selected effective behavior after very efficient and effective problem-solving up to that point for a variety of reasons, including motivational deficits, inhibitions due to emotional factors, and environmental obstacles. This is a problem related to habit formation which cannot be discussed further at this time. Let it suffice to say that other behavior modification techniques, such as behavioral-rehearsal or desensitization, would be required to deal with these problems.

As the client performs the selected behavior, whether in role-playing or "real-life", he is instructed to verify the solution by observing the various consequences of his action(s) and testing or "matching" this outcome against the expected outcome on which he had based his decision. If the match is unsatisfactory to the client, he returns to the decision-making phase of the strategy once again and selects his "second best" alternative for action, repeating this procedure until a satisfactory match is achieved, at which point the solution is considered verified and the strategy is terminated.

Discussion

Training in the use of the problem-solving strategy should be continued,

working on one problematic situation after another in the first problem category until sufficient evidence is obtained that the client is dealing effectively with new problematic situations in that category (e.g., dating, employer-employee interactions). Problematic situations in the next category are then constructed and worked on, and so on until further treatment is no longer required. Throughout the training program, the therapist-consultant must use his knowledge of the client as a "total person"--i.e., his particular assets, liabilities, needs, goals, values, etc.--and his understanding of the client's current life situation, to help him guide and direct the client through the various steps in the prgram. A final point to be stressed is that the goal of such training is not to teach specific responses or solutions to specific problematic situations, as is usually the case in behavior modification programs, but instead, to teach a general strategy or approach to problem-solving that could be applied independently by the client to any soluble personal or social problem.

Within the next few years, we will be carrying out research to evaluate the outcome of a training program based upon the problem-solving strategy described in this presentation. Hopefully, we may also be able to test the effects of certain specific steps in the strategy. We hope that other investigators will join in the study and development of self-controlled behavior modification procedures that stress the role of rational, cognitive processes and mechanisms. We believe that such complex cognitive processes as the problem-solving and decision-making strategies, can and should be reconciled with learning principles, and some promising steps have already been taken in that direction (e.g., Kendler & Kendler, 1962; Mowrer, 1960; Staats, 1966).

We would like to close this presentation with a quote from Jerome Bruner (Bruner, Goodnow, & Austin, 1956) on the state of affairs regarding theories of problem-solving in concept attainment before 1956, since it seems to apply to this

presentation and the dissatisfaction that we have with current theories of behavior modificatio-

"To account for the exquisite forms of problem-solving that we see in everyday life, and may see in our laboratories any time we choose to give our subjects something more challenging than key-pressing to perform, highly simplified theories of learning have been invoked..... If we have at times portrayed conceptual behavior as perhaps overly logical, we will perhaps be excused on the ground that one excess often breeds its opposite. Man is not a logic machine, but he is certainly capable of making decisions and gathering information in a manner that reflects better on his learning capacity than we have been as yet ready to grant" (p.79).

Footnotes

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2. Presented in: M.R. Goldfried (Chm.) Cognitive processes in behavior modification. Symposium presented at the American Psychological Association, San Francisco, September 1968.

References

Breger, L. & McGaugh, J.L. Critique and reformulation of "learning - theory" approaches to psychotherapy and neurosis. Psychological Bulletin, 1965, 63, 338-358.

Bruner, J.S., Goodnow, J.J. & Austin, G.A. A study of thinking. New York: Wiley, 1956.

Dollard, J. & Miller, N.E. Personality and Psychotherapy. New York: McGraw-Hill, 1950.

Gore, W.J. & Dyson, J.W. (Eds.) The making of decisions: a reader in administrative behavior. London: The Free Press of Glencoe, 1964.

Kendler, H.H. & Kendler, T.S. Vertical and horizontal processes in problem solving. Psychological Review, 1962, 69, 1-16.

Kleinmuntz, B. (Ed.) Problem solving: research, method, and theory. New York: Wiley, 1966.

Mowrer, O.H. Learning theory and the symbolic processes. New York: Wiley, 1960.

Osborn, A.F., Applied imagination: principles and procedures of creative problem-solving (3rd ed.). New York: Charles Scribner's Sons, 1963.

Parnes, S. J. Can creativity be increased? Personnel Administration, 1962, 25, 2-9.

Parnes, S.J. Creative behavior guidebook. New York: Charles Scribner's Sons, 1967.

Simon, H.A. Administrative behavior: a study of decision-making processes in administration organization (2nd Ed.) New York: The Free Press, 1957.

Simon, H.A. A behavioral model of rational choice. In W.J. Gore & J.W. Dyson (Eds.) The making of decisions: a reader in administrative behavior. London: The Free Press of Glencoe, 1964, Pp. 111-127.

References (cont.)

Skinner, B.F. Science and human behavior. New York: Macmillan, 1953.

Staats, A.W. An integrated - functional learning approach to complex human behavior. In B. Kleinmuntz (Ed.) Problem solving: research, method and theory. New York: John Wiley & Sons, 1966. Pp. 259-339.